BEELINES Summer 2010

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CROPS

Investigations of Apivar® Efficacy: Fall 2009

During the fall of 2009, some beekeepers reported that Apivar® was not working as expected. The beekeepers noted that mites were not dropping as quickly with Apivar® as they were with Apistan® and CheckMite+™ (when the latter two products were working effectively). The beekeepers who noted this questioned if they were seeing resistance to Apivar®. The reported cases were investigated by Provincial Apiarists, Geoff Wilson and John Gruszka. During the investigation, mite levels in colonies from two bee yards were evaluated weekly using two methods: mite-fall and alcohol washes.

If the beekeeper had applied two strips of Apivar® in the upper brood chambers of the double brood box colonies in the fall, mites continuously fell throughout the treatment period at levels that exceeded the expected natural fall. The mite fall stayed at a constant level throughout the treatment period, and decreased towards the end of the 42-day treatment period. The mites that were on the sticky bottom board all appeared dead.
The alcohol wash method also revealed the same results: mite levels were lowered, but the decrease was more gradual than expected. By the end of the treatment, the Varroa mite levels just met the recommended economic threshold, but more mites than expected still remained in the colonies. Fall-applied Apivar® strips produced similar results in Alberta, Manitoba and Quebec.

Comparatively, colonies that were treated in the spring of 2009 appeared to have had very good mite control. Many samples from colonies treated in the spring with Apivar® had very low Varroa mite levels in the fall of 2009.

Preliminary analysis of the information collected during the fall of 2009 does not indicate Apivar® resistance; however, the findings do indicate that we still need to use this product to its best potential. For example, it is likely that four Apivar® strips will be needed in the fall to treat colonies effectively.

From these experiences, there are a few recommendations that can be made:

1. Check your colonies early in the spring to establish your mite levels using natural mite fall on sticky boards or alcohol washes.

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2. Be ready to treat with a mite control product early in the spring if your mite levels are elevated.
3. Use Apivar® as directed: two strips for every box of bees.
4. Use Apivar® for the full treatment period of 42 days to ensure maximum exposure. If adequate control is not achieved in the initial treatment period, the treatment can be extended by 14 days.
5. Try to use Apivar® in the spring instead of the fall.

The Ministry would like to thank the participating beekeepers for their work on this study.

Making Your Own Nucleus Colonies

Part 1. Following is an introductory article on the importance of making nucleus (nuc) colonies. Subsequent articles will appear in the Fall issue on the economics, methods and timing of making nuc colonies.

Part 1. Importance of Making Nucs

With the recent increases in colony mortality, making plans for replacement colonies is becoming a very important part of beekeeping. Gone are the days when packages could be obtained cheaply to replace colonies. There is little chance of ever returning to the "good ol' days of beekeeping" when bees could be "gassed" every fall and replacement packages ordered for re-establishing the hives the next spring. Currently, the price of packages is too high and there are not enough packages available to make this a viable approach, except when the price of honey is also high.

Unfortunately, continued large losses in the United States and other countries will increase the demand for packages and likely decrease availability further, pushing package prices even higher in the future.

A viable alternative plan is for beekeepers to make their own replacement colonies. That way, beekeepers will not have to depend on others to ensure they have the means to continue with their business.

Two methods are typically used in Canada: making nucs or making splits. While both use part of an established colony including bees and brood to make the replacement colony, these approaches have definite differences, advantages and disadvantages in certain situations.

One of the largest differences between these two methods of making replacements is the amount of foresight needed. Making splits can be viewed as a temporary stop-gap measure to catch-up from losses over the winter. A beekeeper ends up sacrificing a good honey-producing colony to try to make two production colonies that each will not reach their full potential. Although this may be a good option with small winter losses (i.e. under 15 per cent), problems become evident with this system when beekeepers have had larger losses. These problems include the relatively slow rate of increase with only the ability to double in one year, and having to split a large proportion of the remaining strong colonies.

The province's beekeeping industry is now in an era where 15 per cent mortality is a good wintering loss instead of the average. At current levels of colony mortality, beekeepers need a system that can produce more replacements with fewer effects on the parent colonies. Producing your own nucs is the best answer in this situation.

To make a nuc is to plan for the next year. It requires a frame or two of bees and brood, and the new colony should not be expected to contribute much honey in

the first year. This system allows the beekeeper to take small contributions from parent colonies for each new unit. The result is that the parent colony is not weakened greatly for each nuc produced. The new small unit is allowed to grow through the summer and only needs to be large enough to make it through the winter. At first glance, it appears that nucleus colonies incur a lot of expense to the beekeeper before they start to pay back. The small amount of honey produced in the first year and the costs associated with overwintering the unit may make the production of nucs appear expensive; however, that is not necessarily the case. Production of nucs is economically advantageous for every beekeeper.

Stay tuned for articles in the Fall issue on the economic advantages of making your own nucs and the methods and timing required.

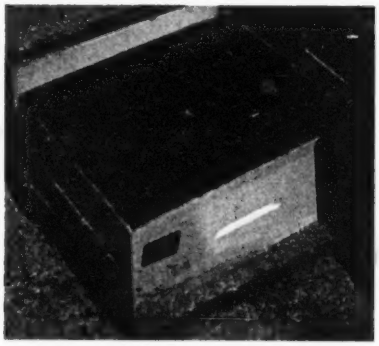

Figure 1: A healthy colony in the spring made from a nuc the previous year.

Learning About *Nosema ceranae*

Nosema are microsporidia that infect the stomach lining of insects. Historically, *Nosema apis* was the only species to infect European honey bees. Infection with *N. apis* increases when bees are confined and cannot clear the microsporidia from their guts. Long extended winters will increase spore levels as will shipping bees in packages.

Nosema ceranae is a new species of the pest that infects European honeybees. Since 2004, when it was found in Spain, the disease has quickly spread throughout Europe and North America.

The growth pattern of *N. ceranae* is different from *N. apis* in that the infection level of *N. ceranae* does not tend to drop in the summer when the bees can make cleansing flights. The result is that *N. ceranae* is not associated with periods of confinement, and is more able to affect colonies at any time of the year.

Spanish beekeepers appear to have little trouble with *N. apis*; however, they are having trouble controlling the new species, which seems to have a much greater effect on colonies throughout the year. *N. ceranae* is thought to be largely responsible for the elevated mortalities in Spain. In the absence of a control for *N. ceranae*, Spanish colonies have greatly reduced worker bee populations, produce less honey and are prone to total collapse. While the symptoms seem very close to Colony Collapse Disorder (CCD), and some studies suggest that *N. ceranae* may have a role to play with CCD, *N. ceranae* has not been identified as the single causal agent for CCD.

In Spain, *N. ceranae*, unlike *N. apis*, does not seem to respond to single-dose treatments of fumagillin. Repeated treatment with smaller doses results in better control.

Research conducted in Spain found that a total of 120 mg of fumagillin applied over a four-week period (i.e. 30 mg of fumagillin per week applied directly to the bees) was most effective. To accomplish this, a 454 g jar of fumagillin was mixed in 80 L of sugar syrup. The colony lids were opened and the bees were drenched with 250 ml of treated syrup. This treatment

was repeated every seven days for a total of four applications per colony. Each application contained 30 mg of fumagillin, resulting in a final treatment of 120 mg per colony.

Registration Update

Beelines is sent to all registered beekeepers in the province. *Beelines* is used to update the mailing list and every time it is printed there are returns from people who have either moved away or are no longer keeping bees.

If you are no longer keeping bees and do not foresee keeping bees in the future, contact the Apiculture Office in Prince Albert to have your name removed from the list of registered beekeepers. You can contact us by calling (306) 953-2304 (at any time and leave a message with your name and address) or you can send an e-mail to geoff.wilson@gov.sk.ca.

E-mail Addresses

If you have an e-mail address and wish to share it with the Apiculture Office, send an e-mail to geoff.wilson@gov.sk.ca and your name will be placed on the beekeeper contact list. The e-mail list will be used to send out information of importance to beekeepers on a short notice (e.g. winter loss survey, pesticide registrations or updates, etc.)

We welcome all who would be interested. It does not matter whether you are a hobby beekeeper or a large commercial beekeeper, having your e-mail address on file will be a benefit to all.